

IN THE CLAIMS

Please amend the claims as follows:

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Claim 1 (Currently Amended): A pattern inspection method comprising:

~~acquiring difference data by subtracting~~ comparing a real pattern window having real pattern data corresponding to predetermined pixels of the real pattern data obtained by imaging an inspection object ~~from~~ to a design pattern window corresponding to the real pattern window and ~~shift~~ shifted design pattern windows which are obtained by shifting the design pattern windows in a plurality of directions, respectively, wherein a shift width of the shifted design pattern windows is within one pixel;

selecting one window from the design pattern window and ~~shift~~ shifted design pattern windows; ~~such that the selected one window has a minimum difference data; and~~

comparing a center pixel of the real pattern window to a center pixel of the selected design pattern window; and

performing a pattern inspection of the inspection object, corresponding to the center pixel, according to a result of the comparison ~~based on a difference value between the selected one window and the real pattern window.~~

Claim 2 (Canceled).

Claim 3 (Currently Amended): The pattern inspection method according to claim 1, wherein the plurality of directions are eight directions of 0°, 45°, 90°, 135°, 180°, 225°, 270°, 315° with respect to ~~a noticed~~ the center pixel of said real pattern window.

Claim 4 (Currently Amended): The pattern inspection method according to claim 1, wherein the performing step comprises:

~~selecting a central pixel of the selected one window~~

obtaining a difference value between the ~~selected central~~ center pixel of the selected  
design pattern window and ~~a central the center pixel of the window of said real pattern data~~  
real pattern window, and

determining a defect of the inspection object by comparing the obtained difference  
value ~~between the selected central pixel of the selected one window~~ and a threshold value set  
in advance.

Claim 5 (Canceled).

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Claim 6 (Original): The pattern inspection method according to claim 1,  
wherein the performing step comprises:

obtaining a difference value by subtracting a noticed pixel of the selected one window  
and predetermined pixels surrounding the noticed pixel of the selected one window from a  
noticed pixel of the real pattern window and predetermined pixels surrounding the noticed  
pixel of the real pattern window,

outputting 1) a "0" difference value in a case where the obtained difference value is  
within a difference value obtained by shifting the design pattern window by one pixel or less,  
2) a difference value obtained by subtracting the minimum value from the obtained difference  
value in a case where the obtained difference value is less than a minimum value of  
difference values obtained by shifting the design pattern window and 3) a difference value  
obtained by subtracting a maximum value of difference values which are obtained by shifting  
the design pattern window by one pixel or less from the obtained difference value in a case  
where the obtained difference value is larger than the maximum value, and

performing the pattern inspection of the inspection object by comparing the outputted difference value with a threshold value set in advance.

Claim 7 (Currently Amended): The pattern inspection method according to claim [[1]] 6,

wherein the difference value is determined based on a lightness of pixels in the real pattern data and a lightness of pixels in [[the]] design pattern data of the selected design pattern window.

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Claim 8 (Currently Amended): A pattern inspection device comprising:

means for ~~acquiring difference data by subtracting~~ comparing a real pattern window having real pattern data corresponding to predetermined pixels of the real pattern data obtained by imaging an inspection object ~~from~~ to a design pattern window corresponding to the real pattern window and ~~shift~~ shifted design pattern windows which are obtained by shifting the design pattern windows in a plurality of directions, respectively, wherein a shift width of the shifted design pattern windows is within one pixel;

means for selecting one window from the design pattern window and ~~shift~~ shifted design pattern windows; ~~such that the selected one window has a minimum difference data,~~ wherein a shift width of the shifted design pattern windows is within one pixel; and

means for comparing a center pixel of the real pattern window to a center pixel of the selected design pattern window; and

means for performing a pattern inspection of the inspection object, corresponding to the center pixel, according to a result of the comparison ~~based on a difference value between the selected one window and the real pattern window.~~

Claim 9 (Canceled).

Claim 10 (Currently Amended): The pattern inspection device according to claim 8, wherein the plurality of directions are eight directions of 0°, 45°, 90°, 135°, 180°, 225°, 270°, 315° with respect to a noticed the center pixel of said real pattern window.

Claim 11 (Currently Amended): The pattern inspection device according to claim 8, wherein the performing step comprises:

~~means for selecting a central pixel of the selected one window,~~

obtaining a difference value between the ~~selected central~~ center pixel of the selected design pattern window and ~~a central the center pixel of the window of said real pattern data real pattern window,~~ and

determining a defect of the inspection object by comparing the obtained difference value ~~between the selected central pixel of the selected one window~~ and a threshold value set in advance.

Claim 12 (Canceled).

Claim 13 (Original): The pattern inspection device according to claim 8,

wherein the means for performing comprises

obtaining a difference value by subtracting a noticed pixel of the selected one window and predetermined pixels surrounding the noticed pixel of the selected one window from a noticed pixel of the real pattern window and predetermined pixels surrounding the noticed pixel of the real pattern window,

outputting 1) a "0" difference value in a case where the obtained difference value is within a difference value obtained by shifting the design pattern window by one pixel or less, 2) a difference value obtained by subtracting the minimum value from the obtained difference value in a case where the obtained difference value is less than a minimum value of difference values obtained by shifting the design pattern window and 3) a difference value obtained by subtracting a maximum value of difference values which are obtained by shifting the design pattern window by one pixel or less from the obtained difference value in a case where the obtained difference value is larger than the maximum value, and

performing the pattern inspection of the inspection object by comparing the outputted difference value with a threshold value set in advance.

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Claim 14 (Currently Amended): The pattern inspection device according to claim [[8]] 13,

wherein the difference value is determined based on a lightness of pixels in the real pattern data and a lightness of pixels in [[the]] design pattern data of the selected design pattern window.

Claim 15 (Currently Amended): A method of manufacturing a mask comprising:  
preparing a substrate with a light shielding film on which a mask pattern is formed;  
and

inspecting the substrate with the light shielding film on which a mask pattern is formed,

wherein the inspecting step comprises:

~~acquiring difference data by subtracting~~ comparing a real pattern window having real pattern data corresponding to predetermined pixels of the real pattern data obtained by

imaging the mask pattern ~~from~~ to a design pattern window corresponding to the real pattern window and ~~shift~~ shifted design pattern windows which are obtained by shifting the design pattern windows in a plurality of directions, respectively, wherein a shift width of the shifted design pattern windows is within one pixel;

selecting one window from the design pattern window and ~~shift~~ shifted design pattern windows; ~~such that the selected one window has a minimum difference data; and~~

comparing a center pixel of the real pattern window to a center pixel of the selected design pattern window; and

performing a pattern inspection of the mask pattern, corresponding to the center pixel, according to a result of the comparison ~~based on a difference value between the selected one window and the real pattern window.~~

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Claim 16 (Canceled).

Claim 17 (Currently Amended): The method according to claim 15,  
wherein the plurality of directions are eight directions of 0°, 45°, 90°, 135°, 180°, 225°, 270°, 315° with respect to ~~a noticed~~ the center pixel of said real pattern window.

Claim 18 (Currently Amended): The method according to claim 15,  
wherein the performing step comprises:  
~~selecting a central pixel of the selected one window;~~  
obtaining a difference value between the ~~selected central~~ center pixel of the selected design pattern window and ~~a central the center pixel of the window of said real pattern data~~ real pattern window, and

determining a defect of the mask pattern by comparing the obtained difference value ~~between the selected central pixel of the selected one window~~ and a threshold value set in advance.

Claim 19 (Canceled).

Claim 20 (Currently Amended): The method according to claim 15,

wherein the performing step comprises:

obtaining a difference value by subtracting a noticed pixel of the selected one window and predetermined pixels surrounding the noticed pixel of the selected one window from a noticed pixel of the real pattern window and predetermined pixels surrounding the noticed pixel of the real pattern window,

outputting 1) a "0" difference value in a case where the obtained difference value is within a difference value obtained by shifting the design pattern window by one pixel or less, 2) a difference value obtained by subtracting the minimum value from the obtained difference value in a case where the obtained difference value is less than a minimum value of difference values obtained by shifting the design pattern window and 3) a difference value obtained by subtracting a maximum value of difference values which are obtained by shifting the design pattern window by one pixel or less from the obtained difference value in a case where the obtained difference value is ~~larger~~ larger than the maximum value, and

performing the pattern inspection of the mask pattern by comparing the outputted difference value with a threshold value set in advance.

Claim 21 (Currently Amended): A pattern inspection apparatus comprising:

an image device to which an image of an inspection object is input and from which an inspection pattern data of the input image is output, which is digitalized for each of pixels;

a memory storing the inspection pattern data output from the image device;

means for extracting an inspection pattern data window with a noticed pixel located at a center, from the inspection pattern data stored to inspect a part of the inspection object;

means for extracting a non-defective pattern data window with the noticed pixel located at the center, from a non-defective pattern data;

means for generating a non-defective pattern data window located at a position that is shifted from the noticed pixel by a width smaller than one pixel, based on the extracted non-defective pattern data window; [[and]]

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means for selecting one window from the extracted nondefective pattern data window and the generated non-defective pattern data window;

means for comparing the extracted inspection pattern data window with the selected ~~generated~~ non-defective pattern data window; ~~thereby inspecting the part of the inspection object~~

means for comparing a center pixel of the inspection pattern window to a center pixel of the selected non-defective pattern data window; and

means for performing a pattern inspection of the inspection object, corresponding to the center pixel, according to a result of the comparison.

Claim 22-24 (Canceled).

Claim 25 (Currently Amended): A pattern inspection apparatus comprising:

an image device to which an image of an inspection object is input and from which an inspection pattern data, which is digitalized for each of pixels, of the input image is output;



a memory storing the inspection pattern data output from the image device;

means for extracting an inspection pattern data window with a noticed pixel located at a center, from the inspection pattern data stored to inspect a part of the inspection object;

means for extracting a design pattern data window with the noticed pixel located at the center, from a design pattern data;

means for generating a design pattern data window located at a position that is shifted from the noticed pixel by a width smaller than one pixel, based on the extracted design pattern data window; [[and]]

means for selecting one window from the extracted design pattern data window and the generated designed pattern data window;

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means for comparing the extracted inspection pattern data window with the selected generated design pattern data window; ~~thereby inspecting the part of the inspection object~~

means for comparing a center pixel of the inspection pattern window to a center pixel of the selected non-defective pattern data window; and

means for performing a pattern inspection of the inspection object, corresponding to the center pixel, according to a result of the comparison.

Claims 26-28 (Canceled).

Claim 29 (Currently Amended): A pattern inspection apparatus comprising:

an image device to which an image of an inspection object is input and from which an inspection pattern data of the input image is output, which is digitalized for each of pixels;

a memory storing the inspection pattern data output from the image device;

a section which extracts an inspection pattern data window with a noticed pixel located at a center, from the inspection pattern data stored to inspect a part of the inspection object;

a section which extracts a non-defective pattern data window with the noticed pixel located at the center, from a non-defective pattern data;

a section which generates a non-defective pattern data window located at a position that is shifted from the noticed pixel by a width smaller than one pixel, based on the extracted non-defective pattern data window; [[and]]

a section which selects one window from the extracted non-defective pattern data window and the generated non-defective pattern data window;

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a section which compares the extracted inspection pattern data window with the selected ~~generated~~ non-defective pattern data window; ~~thereby inspecting the part of the~~ inspection object

a section which compare a center pixel of the inspection pattern window to a center pixel of the selected non-defective pattern data window; and

a section which performs a pattern inspection of the inspection object, corresponding to the center pixel, according to a result of the comparison.

Claim 30 (Currently Amended): A method of inspecting a pattern of an inspecting object, comprising:

inputting an image of the inspecting object to an image device;

outputting an inspection pattern data of the input image from the image device, which is digitalized for each of pixels;

storing the inspection pattern data output from the image device in a memory;

extracting an inspection pattern data window with a noticed pixel located at a center,  
from the inspection pattern data stored to inspect a part of the inspection object;

extracting a non-defective pattern data window with the noticed pixel located at the  
center, from a non-defective pattern data;

generating a non-defective pattern data window located at a position that is shifted  
from the noticed pixel by a width smaller than one pixel, based on the extracted non-defective  
pattern data window; [[and]]

selecting one window from the extracted non-defective pattern data window and the  
generated non-defective pattern data window;

comparing the extracted inspection pattern data window with the selected generated  
non-defective pattern data window; ~~thereby inspecting the part of the inspection object~~

comparing a center pixel of the inspection pattern window to a center pixel of the  
selected non-defective pattern data window; and

performing a pattern inspection of the inspection object, corresponding to the center  
pixel, according to a result of the comparison.

Claim 31 (Currently Amended): A method of manufacturing a mask comprising:  
preparing a substrate with a light shielding film on which a mask pattern is formed;  
and

inspecting the substrate with the light shielding film on which the mask pattern is  
formed,

wherein the inspecting step comprising:

inputting an image of the mask pattern to an image device;

outputting an inspection pattern data of the input image from the image device, which  
is digitalized for each of pixels;

storing the inspection pattern data output from the image device in a memory;

extracting an inspection pattern data window with a noticed pixel located at a center,  
from the inspection pattern data stored to inspect a part of the inspection object;

extracting a non-defective pattern data window with the noticed pixel located at the  
center, from a non-defective pattern data;

generating a non-defective pattern data window located at a position that is shifted  
from the noticed pixel by a width smaller than one pixel, based on the extracted non-defective  
pattern data window; [[and]]

selecting one window from the extracted non-defective pattern data window and the  
generated non-defective pattern data window;

comparing the extracted inspection pattern data window with the selected ~~generated~~  
non-defective pattern data window; ~~thereby inspecting the part of the inspection object~~

comparing a center pixel of the inspection pattern window to a center pixel of the  
selected non-defective pattern data window; and

performing a pattern inspection of the inspection object, corresponding to the center  
pixel, according to a result of the comparison.

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IN THE DRAWINGS

The attached sheets of drawings include changes to Figs. 5 and 12. These sheets, which include Figs. 5 and 12, replace the original sheets including Figs. 5 and 12.

Attachment: Replacement Sheets